



Project: 46.7 ac. tract  
 Client: [REDACTED]  
 CAD File: [REDACTED]  
 Scale: 1" = 300'  
 Date: March 15, 2011

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**Legend**

- 1 Provisionally Suitable
- 2 - 2a Provisionally Suitable to Unsuitable
- 3 - 3a Unsuitable
- Stream - Surface Drain
- House Site - Gravity System

March 15, 2011

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

This report concerns the investigations for septic system suitability and related development issues on the 46.7 acre tract located adjacent to The Peninsula at Kerr Lake Subdivision in northern Vance County. This tract is shown on the county tax parcels as 42.69 acres. Apparently some additional acreage has been added to the parcel according to the map that Carolina Forestry provided.

The attached sketch map shows the locations of various soils areas on the property as well as selected cultural features and drainage features. This map was prepared using property information obtained from the original survey of the property boundary and of the adjoining subdivision. Aerial photography obtained from the Vance County GIS web site was also used. The topographic contours (2 ft. intervals-LIDAR) were obtained from the NC DOT GIS web site. The USDA soil survey maps of the area and the USGS topographic map were also used as general guides to the soils, landforms and streams.

The soils areas and boundaries were estimated from hand auger borings made at selected locations and from field observations of soil related landforms and vegetation. The locations of the individual soil borings as well as certain cultural features and drainage features were estimated using a Trimble mapping grade GPS receiver. Soils areas 2a & 3a (on the south side of the creek) were estimated from interpretations of the USDA soil survey maps and were in part inferred from the topographic contours. These areas were not specifically investigated by hand auger borings. This information should be sufficient in detail to estimate feasibility for developing the property as per your intentions (at least three potential sites) for possible future subdivision of the property. Additional detailed soils investigations may be needed if the property is to be developed more intensively.

## SOILS SUITABILITY

**SOILS AREA 1:** These soils will dominantly classify provisionally suitable for conventional septic system drainfields. These soils typically have clay subsoils that exhibit soils structure and are free of seasonal wetness indicators within the upper 30 to more than 36 inches of the soil profiles. These soils have potential for conventional septic system drainfields. There are few concerns for site modifications. However there is a chance that "at grade" systems could be required locally possibly at site 1 depending upon the final evaluation by the Health Department. At grade systems involve the installation of approved fill materials over the proposed drainfield area. The sewage loading rates (LTAR) are estimated to range from 0.25 to 0.35 gal./sq. ft. of trench bottom for conventional drainfield trenches

**SOILS AREAS 2 & 2a:** These soils will classify provisionally suitable to unsuitable for standard conventional septic system drainfields. These soils have friable clay subsoils that exhibit soil structure and are free of seasonal wetness indicators within the upper 24 to more than 30 inches of the soil profiles. These soils have potential for modified conventional or alternative (low pressure pipe) septic systems. The depth to structureless layers and depth to a seasonal wetness condition are the main concerns. These soils can be re-classified to provisionally suitable by using modifications for conventional systems, such as the

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shallow placement of trenches, the use of the "at grade" installation or by using up-slope interceptor drainage measures. At some locations low pressure pipe distribution systems may be required due to the combination of soils depth and slope. For modified conventional drainfields the sewage loading rates (LTAR) are estimated to range from 0.25 to 0.30 gal./sq. ft. of trench bottom. For low pressure systems (if needed) the sewage loading rates (LTAR) is estimated to range from 0.10 to 0.12 gal./sq. ft. of drainfield area.

**SOILS AREAS 3 & 3a:** These soils will generally classify unsuitable for conventional or low pressure pipe septic systems. The main potential limitations to use are the depth to structure less weathered rock materials, the depth to a seasonal wetness condition, the presence of expansive clays in the subsoils, the proximity to streams and poor landscape position. These soils are generally not recommended for sewage disposal due to the severity of the limitations and the high cost of the any alternative measures that could be employed for sewage disposal (where allowable).

### SUMMARY

There are sufficient usable soils on this property to support the three building sites for four bedroom dwellings or larger to meet your proposed development objectives. Four sites are identified on the attached map, which utilize area 1 soils for drainfields. The house sites as shown will allow for gravity conventional septic systems with few if any concerns for modifications. If necessary area 2 soils can be designated for repair drainfields. There is a somewhat higher probability that site or system modifications will be required for area 2 soils.

This property apparently has a significantly greater potential for development above your present requirements. There is a good chance that significant areas of soils that are usable for septic systems are available in area 2a. As indicated above the interpretations of this area and area 3a are based on our interpretations of the USDA soils maps. This map reflects our experience is that the more steeply sloping areas will most likely contain unsuitable soils. The USDA soils maps have some utility relative to sewage disposal regulations, but cannot be taken strictly at face value, because the USDA classification system does not correspond directly with the State North Carolina Sewage Disposal regulations. Furthermore the USDA maps do not show all of the relevant soils detail for the planning of a small lot residential subdivision. Inclusions of contrasting soils of 1 to 3 acres in size often occur in the mapped areas.

Attached with this report is a copy of the USDA soils map for the Peninsula Subdivision showing the soil units (CeB2, ApB & WeD) that have moderate limitations, and the (IrB) soil unit that has severe limitations for septic systems. Moderate limitations are often interpreted as being provisionally suitable for septic systems and severe limitations usually indicate soils unsuitable for septic systems. A copy of our detailed soils map for the subdivision is also attached, which shows suitability based on State Sewage Disposal Regulations. This map shows that significant areas of unsuitable soils were identified in the areas classified as having moderate limitations by the USDA. Based on this information you might expect some additional unsuitable soils to be present in area 2a.

Please note the stream features (blue line) that are shown on the map. Permits from the Army Corps of Engineers and the NC DNER, Division of Water Quality will be required for any additional impacts to

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these streams. Also there may be some small wetland areas associated with these features. Permits are also required for wetland impacts.

Please call me if you have any questions concerning these investigations or this report.

Sincerely

Daniel J. Bliley

March 16, 2011